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## JOURNAL OF INDIAN LEATHER TECHNOLOGISTS' ASSOCIATION (JILTA)

Indian Leather Technologists' Association is a premier organisation of its kind in India was established in 1950 by Late Prof. B.M.Das. It is a Member Society of International Union of Leather Technologists & Chemists Societies (IULTCS).

The Journal of Indian Leather Technologists' Association (JILTA) is a monthly publication which encapsulates latest state of the art in processing technology of leather and its products, commerce and economics, research & development, news & views of the industry etc. It reaches to the Leather / Footwear Technologists and the decision makers all over the country and overseas.

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— Portfolio ———

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## -Editorial -



#### Economic Surge in Central & Eastern Europe - A Hope for Us

Incoming data for last year suggests that the Central and Eastern European **(CEE)** economy grew robustly in 2017, enjoying the best year of growth in over a decade. Economists do expect regional GDP to have grown 4.6% last year, a notch up from last month's projection and notably above the 3.1% increase seen in 2016. The region is benefiting from strong export demand as the Euro zone economy, which had a stellar 2017, has started to soar. Moreover, loose fiscal policies, tight labour markets and strong inflows of EU developmental funds are acting as **tailwinds** to the domestic economic flyer.

Official data for 2017 is so far only available for Poland, the region's largest economy. A preliminary estimate by the Central Statistical Office of Poland revealed that GDP grew at the fastest pace since 2011 in 2017. The domestic economy drove growth amid rising wages, a child benefit scheme and rebounding investment. Elsewhere in the region, growth is expected to have also picked up in major players the Czech Republic, Hungary, and Romania, along with the Baltic states. Romania fired on all cylinders last year, growing a notable 6.8% thanks to buoyant household consumption and loose fiscal policies.

Last year's robust economic momentum spilled over into several countries' financial markets, and Central and Eastern European (CEE) currencies were among the best-performing emerging-market currencies of 2017. Several countries, including Croatia, Hungary and Poland, also saw their bond yields fall last year. Buoyant investor sentiment came despite a sizable degree of political uncertainty in the region. Poland was embroiled in a conflict with the EU over its rule of law, Romania's political scene was characterized by political infighting and corruption protests, and Brexit negotiations clouded the future relationship with the UK, a key trading partner. Although investor sentiment has up until now remained relatively unscathed, continued political uncertainty could dent confidence in the region. At the start of 2018, political risks are still high: The Czech Republic remains without a government following October's elections, Poland continues to clash with EU officials and on 15 January, Romania's prime minister stepped down, the third change in office in less than a year.

The **tailwinds** that propelled growth in 2017 remain largely in place and are expected to shore up activity this year. Tight labour markets and an accommodative

external backdrop should boost regional GDP to expand 3.7% in 2018, up a notch from last month's projection. Nevertheless, political noise remains high, posing a risk to the outlook.



On top of this, rising inflation could take a bite out of consumption, while tightening global interest rates could weigh on the appeal of **CEE** assets. In 2019, growth is projected to come in at 3.2%.

This month's upgraded 2018 outlook is due to upward revisions for eight of the economies in the region, including major players the Czech Republic, Hungary, Poland and Romania. Croatia, Lithuania and Slovakia saw no changes to their forecasts.

Romania is projected to be the region's top performer this year, with expected economic growth of 4.4%. Latvia and Poland are also seen achieving fast growth rates of 3.8% and 3.9%, respectively. On the other end of the spectrum, Croatia is projected to be the region's laggard, with an expansion of 2.8%.

#### A look at Polish economy:

Recently released data showed that GDP grew 4.6% in 2017, marking the strongest growth reading in six years. A rebound in fixed investment on the back of recovering inflows of EU funds and a stronger expansion in household spending were the main drivers of growth. Despite a marginal uptick in December, the unemployment rate was on a downward trend throughout 2017. This, together with accommodative financing conditions and robustly rising wages, translated into buoyant consumer spending. According to the business confidence indicator, 2018 started on a solid footing: In January business sentiment surged to an over nine-year high, as firms grew far more optimistic on current and future production levels. On 30 January, President Duda signed the 2018 budget into law. The budget includes a planned fiscal deficit of 2.7% of GDP, below the EU's ceiling of 3.0% and less optimistic than the one forecast by Focus Economics panel.

This year household spending will continue to increase at a healthy rate, buttressed by rising wages and a tight labour market; however, rising inflation and less favourable financ-



ing conditions will lead to a moderation in growth. On the other hand, the expansion in fixed investment is expected to strengthen, spurred by an increased absorption of EU funds. Downside risks stem primarily from troubled political relations with the EU. Focus Economics panellists expect GDP to grow 3.9% in 2018, up 0.1 percentage points from last month's forecast, and 3.4% in 2019.

# CZECH REPUBLIC - Talks to form a government drag on

The economy had a strong showing in 2017: Growth picked up pace in three consecutive quarters, and indicators suggest the momentum carried over into the final quarter. Industrial production and retail trade turned in positive results again in November, albeit moderating from the prior month. Furthermore, the manufacturing PMI continued climbing throughout the quarter, clocking a multi-year high in January. However, while consumer confidence improved in January, business confidence slipped. Politically, the sailing is less smooth. President Milos Zeman, an ally of Russian president Vladimir Putin, won a second term on 27 January; he is one of the few allies of Andrej Babis, who has been prime minister since December. Babis, who lost a no-confidence vote on 10 January, has been unable to garner majority backing to form a government. However, the Communist Party agreed to restart talks over possible support of a Babisgovernment. The combination of Zeman and Babis could, however, strain relations with the EU further as both men oppose further EU integration.

Ongoing political uncertainty is likely to drag on the economy in the short term. Moreover, Babis' inability to form a government has derailed his plans to implement pro-growth economic policy in a timely manner. Despite the continued uncertainty, economic growth should remain solid this year. Household spending is expected to remain robust and drive growth, while fixed investment is also expected to remain strong. Economic Panellists see GDP growing 3.4% in 2018, up 0.2 percentage points from last month's projection, and 2.8% in 2019.

#### Look at ROMANIAN Economy

On 15 January Prime Minister Mihai Tudose resigned following a power struggle with the leader of the ruling Social Democratic Party, Liviu Dragnea. Viorica Dancila was swiftly ap-

# \_Editorial\_\_\_\_

pointed and on 29 January was confirmed by the parliament, becoming the third prime minister in seven months amid ongoing anti-corruption protests. The economy, however, continued to expand strongly in the final quarter of the year, according to available data. Buoyant external demand from the EU continued to underpin growth: Both exports and industrial production recorded remarkable year-on-year increases in the first two months of Q4, on the back of a strong automotive sector. Household spending also remained buoyant: Retail sales soared in annual terms in both October and November, supported by a tightening labour market and robust wage rises. That said, Romania's political landscape continues to be troubled.

This year, growth in private consumption is expected to slow. Although wages will continue to rise at a healthy rate and the labour market remain tight, higher inflation, weakening consumer confidence and less favourable financing conditions will likely weigh on consumer spending. On the other hand, an increased absorption of EU funds will fuel a faster expansion in fixed investment. All in all, growth should moderate but remain solid. Downside risks to the outlook come from the weak fiscal position and the possibility of continued unrest. Focus Economics panellists expect growth of 4.4% for 2018, which is up 0.2 percentage points from last month's forecast. They see the economy expanding 3.5% in 2019.

#### Look at HUNGARIAN economy

Prime Minister Viktor Orbán set general elections for 8 April, a vote which will likely see him installed for a third term. The Prime Minister, who has ruled uninterruptedly since 2010, has overseen a dramatic turnaround of the economy, with unemployment declining, the fiscal deficit narrowing substantially, and public and external debt levels on a more stable trajectory. The ruling Fidesz party is expected to comfortably win the election, although it remains to be seen if they will clinch a two-thirds majority, which would allow them to consolidate power and implement constitutional changes. The latest indicators suggest that economic activity remains on a solid footing, boding well for Orbán's political ambitions. Unemployment remained steady at an all-time low in November, and economic sentiment hit a new all-time high in January, breaking the previous month's record. Hungary's growth prospects are bright. A tight labour market, expected wage hikes and credit growth will support growth in private consumption, while inflows of EU funds into the economy will



## -Editorial —

boost growth in fixed investment. Similarly, the external sector is expected to grow on higher external demand. Focus Economics panellists project the economy will expand 3.6% in 2018, which is up a notch from last month's forecast. For 2019, the panel sees growth moderating to 3.0%.

According to an estimate produced by Focus Economics panellists, inflation receded in December, after hitting a nearly five-year high in November. Inflation fell from 2.6% in November to 2.3% in December. Lower price pressures were seen in nearly every economy, with the exceptions of Romania and Slovakia.

Higher inflation and tightening monetary policy in the U.S. have caused policymakers in the **CEE** region to switch gears and begin tightening accommodative monetary policies. In

February, the Czech National Bank raised rates. However, in January, Hungary and Poland's central banks held rates unchanged. Inflation is seen averaging 2.5% this year, which is unchanged from last month's forecast. Solid growth and higher commodity prices will drive inflationary pressures this year. In 2019, inflation is seen stable at 2.5%.

Therefore, we may hope for better export output as a whole subject to Indian foreign policy which is most favourable at the moment!!

Goulan Mulcherjee

Dr. Goutam Mukherjee Hony. Editor, JILTA





From the Desk of General Secretary

# Seminar organized by ILTA at 33<sup>rd</sup> IILF' 2018 at Chennai – A Report

Keeping up the trend of previous three years a seminar was organized jointly by the Central and Southern regional committee of Indian Leather Technologists Association (ILTA) in collaboration with 'GCELT', 'CSIR-CLRI' and 'Indian Leather' at the Hall-A of Convention Center in the Chennai Trade Center campus on Friday the 2<sup>nd</sup> February' 2018 during 33<sup>rd</sup> India International Leather Fair (ILLF – 2018).

This was the fourth successful outreach programme by ILTA on the occasion of India International Leather Fair at Chennai.

Dignitaries who adorned the programme as well as the dais were as follows:

- 1. Mr. Arnab Jha, President, ILTA.
- 2. Mr. N. R. Jagannathan, President, Southern Regional Committee, ILTA.
- 3. Padmashree & Padmabhushan Dr. T. Ramasami, Former Secretary, Deptt of Science & Technology, Govt. of India and the Chief Guest of the function.
- 4. Mr. D. Sothi Selvam, Director (Manufacturing Business), Balmer Lawrie & Co. Ltd. and the Guest of Honour of the function.
- 5. Mr. Ivan Kral, Industrial Development Officer, UNIDO and the Speaker of the day.
- 6. Dr. J. Raghava Rao, Chief Scientist, CSIR-CLRI, and the Speaker of the day.
- 7. Mr. Susanta Mallick, General Secretary, ILTA.

Other dignitaries present on the occasion were Dr. Sahasranaman, Mr. S. S. Kumar, Dr. M. Mwinyihija (Ethiopia), Dr. Buddhadeb Chattopadhyay, Dr. Jemes Fennen (TFL Internatiomal), Dr. S. Rajamani.

The Master of Ceremony was Dr. Goutam Mukherjee, Professor, GCELT and Hony' Editor, JILTA. The audience consisted of around 100 persons.

The event commenced with Welcome address offered by Mr. N. R. Jagannathan, President, Southern Regional Committee, ILTA. He sincerely remembered the earlier several activities undertaken by ILTA during Presidentship of Late Sanjoy Sen and also remembered the role of the past renowned members of ILTA who had taken a leading role in development of Indian Leather Industry. He welcomed all the dignitaries and participants present



on this event. He expressed hope that in this way ILTA would be able to remain and develop more relevancies to the Industry.

In his address, Mr. Arnab Jha, President, ILTA highlighted the joint role of ILTA and CLRI in successfully organizing the event of 34<sup>th</sup> IULTCS Congress taken place at Chennai last year. He especially mentioned that the last IULTCS congress was another plume on the crown of these two pioneer organizations in Indian Leather Industry in last 15 years which are: (1) IULTCS Congress in 1999, (2) Congress on Leather Science & Technology in 2000 (3) Asia International Congress of Leather Science & Technology 2010 and (4) 34<sup>th</sup> IULTCS Congress' 2017.

All the Guests and Speakers were then honoured with Bouquets, Swals and Mementoes followed by formal release of the 'IILF-2018 Special Issue' of Journal of Indian Leather Technologists' Association (JILTA), February' 2018 by Dr. T. Ramasami, Mr. Sothi Selvam and other dignitaries on the dais with join hands.

In his address Dr. Ramasami very emotionally recalled the past pioneer figures including Late Prof. B. M. Das, the father of Indian Leather Industry and their role in Indian Leather Sector. He very remarkably pointed out the recent development of the Journal of Indian Leather Technologists' Association (JILTA). He highly appreciated the enhancement in rating of this one of the oldest journals in International Standard. He also advised that ILTA should follow and spread out more and more the Mission Vision and its activities, as mentioned in JILTA, throughout the country especially in the cities of Kanpur, Jalandhar, Agra etc.

Mr. Sothi Selvam in his address expressed heartiest gratitude to ILTA for inviting him to attend the programme and expressed hope that only ILTA can take a role of bridge between Leather Industry and Leather academies in India. He assured continuous support to ILTA from his esteemed organization Balmer Lawrie & Co. Ltd.

Dr. Buddhadeb Chattopadhyay highlighted role of GCELT along with ILTA in developing the Indian Leather Industry since its inception. He principally stressed upon the



necessity for sustainable training, education and skill development programmes to be initiated for making the Indian Leather Industry vibrant in true sense.

Mr. Susanta Mallick then announced the names of the three export houses who would be felicitated by ILTA for securing 1<sup>st</sup>, 2<sup>nd</sup> and 3<sup>rd</sup> places respectively as Best Export Award Winners 2016-17 for their overall export performance in the country declared by Council for Leather Exports (CLE).

The names of the houses are as follows :

1 <sup>st</sup> Place -	M/s Farida Group, Chennai
2 <sup>nd</sup> Place -	M/s K. H. Exports (I) Pvt. Ltd., Chennai

3<sup>rd</sup> Place - M/s TATA International, Chennai

The first speaker of the event **Mr. Ivan Král**, Industrial Development Officer, United Nations Industrial Development Organization (UNIDO), then delivered his lecture titled "**e-Learning in Leather Industry**". His captivating presentations were really asset to the audience through which new marketing management system for leather industry was elaborated. It was a lesson to the new entrepreneurs by which marketing of their products could be globalized easily. He put some examples from Italy, German, Australia, China and US the correct implementation and impact of this new online marketing system. It seems that the system would reduce the global market volume in near future to the Industry.

**Dr. Raghava Rao**, the second speaker of the event started his lecture with '*Guru Vandana*' (Worship of Master) to respect his teacher Dr. T. Ramasami. He mesmerized the audience with his fascinating lecture titled "Waterless Chrome Tanning: Treading the Road Not Taken". He rightly pointed out the parameters of the prospective journey of R & D activities in Indian leather industry, especially chrome free tanning process. In view of 'Sustainability', a global term now a days in interest of human being, how the greener and cleaner technology could be more and more implemented properly, was the main theorem of the subject.

Mr. Susanta Mallick concluded the event with offering a Vote of Thanks to the gathering, especially to the Southern part of ILTA for their all out support to make the event grand success and requested all to have some tea & refreshment arranged outside the seminar hall.

#### 7<sup>™</sup> MONI BANERJEE MEMORIAL LECTURE

This will be held on Thursday the 15<sup>th</sup> March, 2018 at 03.00 PM (Registration from 02.30 PM) at the Seminar Hall – CVR of Science City, J. B. S. Haldane Avenue, Kolkata - 700046 as per the programme given follows :-

- 14.30 Hrs : Registration
- 15.00 Hrs : Welcome Address by Mr. Arnab Jha, President, ILTA
- 15.10 Hrs : Award of Moni Banerjee Memorial Medal to the toppers of the Leather/Footwear Technology Diploma Exams 2017 of various institutes
- 15.15 Hrs : Project Presentation by the Award Winners
- 15.25 Hrs : 7<sup>th</sup> Moni Banerjee Memorial Lecture
- 16.25 Hrs : Vote of Thanks by Mr. Susanta Mallick, General Secretary, ILTA
- 16.30 Hrs : Refreshment

All are most cordially invited to participate.

Individual Invitation Cards were posted on Saturday the 24th February' 2018.

#### CONDOLENCE MEETING

A condolence meeting has been organized jointly by Indian Leather Technologists' Association, Govt. College of Engineering & Leather Technology and Alumni Association of Govt. College of Engineering & Leather Technology at 5.30 pmon Wednesday the 7th March' 2018 at the Conference Room of GCELT to pay respect to the departed souls of the following Life Members of our Association who left for their heavenly adobs in recent past :-

- 1. Sasanka Sekhar Dutta
- 2. Sudhir Kumar Das
- 3. Ashoke Kumar Sen
- 4. Probodh Kumar Bhattacharjee

All are requested to attend. This information has been communicated by email on 24.02.2018 to all our members who have provided their email IDs to us.



ILTA News=

#### You are requested to :-

- a) Kindly inform us your 'E-Mail ID', 'Mobile No', 'Land Line No', through E-Mail ID: <u>admin@iltaonleather.org</u> or over Telephone Nos. : <u>24413429 / 3459 / 7320</u>. This will help us to communicate you directly without help of any outsiders like Postal Department / Courier etc.
- b) Kindly mention your **Membership No. (If any)** against your each and every communication, so that we can locate you easily in our record.

(Susanta Mallick) General Secretary

Executive Committee Members meet every Thursday at 18-30 hrs. at ILTA Office. Members willing to participate are most welcome.



\_\_\_\_\_ Eventful Corner \_\_\_\_\_



\_\_\_\_\_ Eventful Corner \_\_\_\_\_





#### INNOVATIVE ENVIRONMENTAL TECHNOLOGIES INCLUDING WATER RECOVERY FOR REUSE FROM TANNERY AND INDUSTRIAL WASTEWATER – INDIAN AND ASIAN SCENARIO S. Rajamani

Chairman - Asian International Union of Environment (AIUE) Commission, Old No.18, New No.45, First Street, South Beach Avenue, MRC Nagar, Chennai – 600 028, India

Environmental challenges due to depletion of quality water resources and increase in salinity, it has become necessary to control Total Dissolved Solids (TDS) in the treated effluent with water recovery wherever feasible. Adoption of special membrane system has been engineered in many individual and Common Effluent Treatment Plants (CETPs) in India, China and other leather producing countries. The sustainability of saline reject management is one of the major challenges.

Conventional tannery wastewater treatment systems include physiochemical and biological treatment to reduce Chromium, BOD, COD and Suspended Solids. To tackle treated effluent with TDS in the rage of 10000 to 30000mg/l, multiple stage high pressure membrane units have been designed and implemented for recovery of water. To reduce the chemical usage and sludge generation in the tertiary treatment, Membrane Bio-Reactor (MBR) has been adopted which replace secondary clarifier and sophisticated tertiary treatment units such as Reactive Clarifier, Ultra - filtration (UF), etc. Commercial scale high-tech membrane systems have been implemented in many locations for the capacities ranging from 500 to 10000m<sup>3</sup>/day.

This paper deals with the recent developments on the environmental protection techniques in tannery wastewater treatment with focus on water-recovery for reuse, salt recovery, marine disposal of saline reject with proper bio-control system, etc. Details of applied innovative treatment technologies are provided in this novel technical paper. Sustainability of the Asian Leather Sector due to enforcement of new and stringent environmental regulations is also dealt in this paper.

Keywords: Effluent Treatment System, Environment, Sustainability, Water Recovery.

#### 1. INTRODUCTION

Annual leather process in Asian Countries is estimated

at 8 to 10 million tons of hides and skins which is more than 50% of the estimated World leather production of about 16 million tons per year. Wastewater discharged from world tannery sector is about 600 million m<sup>3</sup>/ annum. The tanneries in Asian countries including India, China, Vietnam, etc. discharge more than 350 million m<sup>3</sup> of wastewater per annum.

The conventional physiochemical and biological treatment systems are designed and implemented only to reduce Biochemical Oxygen Demand (BOD), Chemical Oxygen Demand (COD), Suspended Solids (SS), Heavy metals etc. and not TDS and salinity which are mainly contributed by chlorides, hardness and sulphates. Due to inherent quality of wastewater from tanning industry, the treatment plants are unable to meet the prescribed standards in terms of TDS, chlorides in salinity in the treated effluent.

There is not much scope in mixing the treated tannery effluent with domestic sewage to achieve the TDS level in many locations in Asia in the absence of organized sewage treatment plants of required capacity. Many polluting industries including tanneries are located in the land locked areas and there are constraints to discharge the treated effluent with high TDS in the Sea.

The TDS limit is being enforced in India and other parts of the World depending upon the final mode of disposal. In addition to the removal of TDS in the treated effluent, it is necessary to recover water for reuse to meet the challenge of water shortage. In many states in India, the pollution control authorities insist on water recovery integrated with Zero Liquid Discharge (ZLD) system. However, the achievement of Zero Liquid Discharge concept has got many technical challenges in addition to the application of various types of membrane systems. Management of the concentrated saline stream treatment by adopting energy intensive evaporation system seems to be one of the major issues in land locked areas.

Corresponding Author's E-mail ID : dr.s.rajamani@gmail.com



Since 1950

This technical paper deals with the recent developments on the environmental protection techniques in including water recovery from water discharged from tanneries and other industrial waste water treatment with focus on sludge reduction water recovery for reuse and salt recovery, marine disposal of saline reject with proper treatment and guard, etc. Case studies of major projects implemented in India, Spain, China, etc. and saline reject disposal coastal zones are covered in the novel technical paper.

#### 2. IMPROVED TREATMENT SYSTEM FOR SLUDGE REDUCTION, WATER RECOVERY & TDS MANAGEMENT

Due to inherent quality of industrial wastewater such as textile dyeing units, tanneries etc., the conventional treatment plants are unable to meet the prescribed TDS level of 2100 mg/l in the treated effluent. In addition to TDS management the control of volatile solids in hazardous category sludge is also becoming a necessary.

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For control of sludge and recovery of quality water from wastewater, the required treatment steps are (i) Chrome recovery and other in process control including cleaner production (ii) Conventional physiochemical and biological effluent treatment systems to reduce BOD, COD, SS etc. and (iii) Tertiary treatment systems including, micro-filter, low pressure membrane units such as ultra-filtration etc., before the application of single or multiple stage Reverse Osmosis (RO) system. A special treatment process for recovery of water from waste water is given in Figure 1.



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After primary and secondary treatment units, Reactive Clarifier, Dual Media Filter, Micro Filter, Ultra-Filter (UF) are installed prior to RO system for recovery of water.

The number of stages and types of RO system are based upon the TDS concentration in the feed water, estimated percentage of guality water recovery and reduction in volume of saline reject. High pressure Sea water membrane is adopted for handling treated effluent with TDS concentration more than 10,000 mg/l. The quality water recovery rate could be achieved to the level of 70 to 90% depending upon the feed water TDS level, type and stages of membrane system etc. In addition to recovery and reuse of quality water by the industry, the additional benefits are savings in chemical usage in the tanning process and reduction in pollution load in the effluent. The reject saline stream from RO system needs to be managed by adopting the options of forced / thermal evaporation system or disposal into Sea wherever feasible with suitable control.



Fig. 2 - Amiad Filter & Ultra-filter (UF)

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Many full scale membrane systems have been installed for recovery of water from domestic and tannery wastewater with capacities ranging from 100 to 20000m<sup>3</sup>/day.

# 3. MEMBRANE BIO-REACTOR (MBR) INTEGRATED WITH RO SYSTEM

Membrane Bio Reactor (MBR) system is commonly adopted in many countries to remove the residual BOD, suspended solids / coliform, etc. from the effluent. After treatment with MBR, the water is applied through RO system for removal of TDS and salinity to get drinkable quality water with TDS less than 500mg/l. A Common Effluent Treatment Plant (CETP) in Spain with MBR and RO system for water recovery was established in 2005. Recent times many CETPs in India have adopted MBR and other membrane system for water recovery and reuse from the tannery effluent. After MBR / UF treatment, the suspended solids and BOD values in the effluent are below detectable level and taken for treatment with RO system for recovery of water after the removal of TDS and salinity.

In China also water is becoming a scarce commodity in many locations. Expansion of high water consuming industries is allowed only if they are provided with water recovery system in the effluent treatment plants. To recover water from the tannery wastewater, submerged MBR linked with activated biological treatment is provided in the first stage. Following MBR system an RO plant in "Christmas Tree" configuration has been installed and operated at 12–16 bars. The RO plant produces about 70% permeate and 30% concentrate. The quality of the recovered water meets the drinking water standards. The saline water concentrate stream is further treated with Fenton process before disposal.

A view of the submersible MBR in one of the tannery effluent treatment plants in China is shown in



Fig. 3 - Reverse Osmosis system following MBR / UF

The Nano Filtration (NF) is adopted for removal of colour and salts such as sulphates from the treated effluent after ultra filtration or MBR stage. Nano-filtration membranes are operated under low pressure with high yield of about 90%. Adopting NF will improve the efficiency of RO in water recovery and to decrease the volume of saline reject.

Multiple stage evaporators using thermal and electrical power have been installed for evaporation of the reject saline stream from RO system. However, there are many technical issues such as constrains in continuous operation of the system, meeting the required quality of the condensate water from the evaporator for reuse, management / utilization of the recovered salt with impurities etc., The capital and operational costs are also high. Further techno economical review and modified options are required on the sustainability of the system particularly in land locked areas.

# 4. MARINE DISPOSAL OF TREATED SALINE STREAMS FOR TDS MANAGEMENT

A novel technological development has been made for the drawl of Seawater of 30,000m<sup>3</sup>/day from nearby Sea for the desalination plant integrated with a major leather complex in South India. Out of the total water quantity, freshwater of about 10,000m3/day will be generated and the remaining 20,000m<sup>3</sup>/day will be discharged into Bay of Bengal with special bio-control and dispersion system to safe guard the aquatic life. The leather complex will be using the freshwater generated by desalination plant for its process requirements and 9,000m<sup>3</sup>/day wastewater will be treated, mixed with saline reject of the desalination plant, stored in a water tight pond for a capacity of about 10 days and discharged into the Sea by laying 5 km pipeline using high pressure HDPE pipe and special sprinkling system. The combined treated saline stream with a quantity of about 29,000m<sup>3</sup>/day will be discharged once in a week under the overall control of environmental protection authorities.

With the support of many National Institutes and other organizations, model studies were carried out in finalizing the novel marine outfall. The spreading of an effluent cloud released in a marine environment is governed by advection caused by large scale water movements and diffusion caused by comparatively small scale random and irregular movements without causing any net transport of water. Hence, the important physical properties governing the rate of dilution of an effluent



# cloud in coastal waters are bathymetry, tides, currents, circulation and stratification.

A five port diffuser systems with 0.18 m diameter is planned with a jet velocity of 2.5 m/sec, for the release of treated effluents and reject water from the proposed desalination plant.

The Environmental Clearance (EC) and approval has been accorded by Government of India to this unique integrated project with water recovery using desalination process, tannery wastewater treatment, novel and safe saline reject disposal into Sea without affecting the marine life which is first of its kind in India.

# 5. Technological developments in Asian and major leather producing countries

The recent developments in cleaner production and waste management in Asian and other major leather producing countries are given in Table 1.

#### Table 1 – Technological Developments in Environmental Protection

Country	Research & Technical Development
BANGLADESH	The main tannery cluster in Bangladesh is located in Dhaka city. Tanneries introduced cleaner technologies and chrome recovery system etc. with the support of UNIDO. The tanneries from the Dhaka city are being relocated in a newly developed industrial estate with Common Effluent Treatment Plant (CETP) of 30MLD capacity.
CHINA	Currently there are about 800 tanneries. Till now, about 13 CETPs are in operation, some more are under planning. Planned to reduce the volume of water usage and pollution load at source through cleaner production programme. The tanneries are permitted to expand the capacity without increase in the water usage. One of the major tanneries has implemented the MBR and RO system for water recovery and reuse.



Country **Research & Technical Development** As such there is no specific restriction on the Total Dissolved Solids (TDS) or salinity norms for the disposal of treated effluent. However meeting the BOD, COD norms for the saline streams from RO is one of the issues being addressed by new technological development. As a sustainability measure new licenses are given to tanneries with a processing capacity of more than 3000 tons /year of raw hides and chine INDIA A biggest CETP in Asia with a capacity of 48,000m3/day (48 MLD) for 450 tanneries is being planned with a budget of about 60 million USD in Kanpur city. Zero Liquid Discharge concepts by adopting membrane system for recovery of water from tannery effluent have been implemented in the South Indian tanneries at a cost of about 100 million USD.

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Fig. 5  $\,$  - UASB system with Bio-Energy generation from a CETP in India.



Fig. 6 - Extended Aerobic oxidation for sludge reduction in a CETP, Italy

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Country	Research & Technical Development
NEW ZEALAND	Enzymes and unhairing process is becoming more popular. Elimination of salting of skins by introducing chilling process in selected areas, Sulphide oxidation, pH & settleable solids control and discharge of effluent into public sewer system.
ROMANIA	R & D activities in Cleaner Production and Environmental Protection are being carried out in National Research and Development Institute for Textiles and Leather (INCDTP) / ICPI. Many co-operation programmes in association with COTANCE and other institutions are under progress in Bucharest, Romania. Media and Conferences are effectively used to promote the importance and image of leather industry and environment protection activities.
COTANCE OF PR AND	DOTE IMAGE AND GROWTH OFESSIONAL IN LEATHER EFFLUENT TREATMENT - EUROPE & ASIA
Leather Produc	ction with Environmental control Is my Job
Using Media and to promote the and image of leat and environment activities ICAMS 2 ROMAN	Conference importance her industry protection
	Fig. 7 – ICAMS 2016 – Romania
RUSSIAN FEDERATION	Many institutions such as Department of Leather and Fur Technology. Water ecourses and Commodity Research, East Siberia State University of Technology and Management, Ulan- Ude, Russia and other industrial organizations promote technological development and environmental protection in leather and other industrial sector.
Fig.8 – En	vironmental Protection - LAKE BAIKAL - SIBERIA
25% of World's Quality Water – F	reserved without Pollution
TAIWAN	Currently there are about 50 tanneries in operation in Taiwan. The tanneries are having individual treatment plants with capacities ranging from 300 m3 – 2000m3/day. They adopt conventional physiochemical and biological treatment systems.

# Fig. 9 - Multistage roof top, aerobic biological treatment unit, Taiwan TURKEY There are about 540 tanneries existing in 14 zones. Eight Common Effluent Treatment Plants (CEIPs) have been established and are in operation. The biggest CEIP with a capacity of 36,000m3/day is in Tuzla near Istanbul. The other major tannery cluster is in Izmir with an integrated CEIP. The tanneries had resettled in industrial zones. The treated effluent is disclosed in to sea for TDS management with special bio-control.

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Research & Technical Development

Fig. 10 - CETP in Istanbul, Turkey with Sea discharge for TDS management R&D activities on cleaner production and environmental protection are being continued in universities such as Ege University, Izmir etc. Sludge disposal is a major problem similar to other countries.

#### 6. CONCLUSION

Country

The leather production activities especially raw to semifinishing process are being shifted from the developed nations such as United States, West European Countries, to Asian, North African and Latin American Countries. The major tanneries in leather producing Countries such as China, Italy, India, Russian Federation, etc. have to develop and adopt new environmental protection measures such as adoption membrane system, water recovery, etc. due to enforcement of stringent environmental regulations. The sustainability of the smallscale units is becoming a serious issue to meet the new environmental requirements. Major investments are being made for environmental protection and resettlement of

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tanneries from the urban areas to the industrial parks with common effluent treatment plants. New regulations and restrictions such as REACH on the use of certain chemicals, salinity and water recovery under zero discharge concepts, disposal/management of chrome containing sludge etc. envisage continued Research & Development activity. Innovative tanning processes which will greatly reduce the water and chemical usage and minimize solid waste generation are needed together with overall environmental planning and management.

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other Leather Industry Associations and Common Effluent Treatment Plants (CETP) are acknowledged.

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## **Competency Based Training Methodology : A Guideline for Trainers**

#### Dibyendu Bikash Datta

ASSOCIATE PROFESSOR, DEPARTMENT OF FASHION MANAGEMENT STUDIES NATIONAL INSTITUTE OF FASHION TECHNOLOGY (MINISTRY OF TEXTILES, GOVT. OF INDIA) PLOT-3B, BLOCK-LA, SECTOR III, SALT LAKE CITY, KOLKATA - 700 098

#### Abstract :

Competency Based Training (CBT) describes progression through training referenced to the demonstrated ability to perform certain tasks. In recent years, this has become the dominant curriculum model. Ever demanding forces of globalization have introduced new discourses into curriculum planning in the technical and vocational skills education. There is no doubt that the proper development of technical and vocational skills is vital to the economic development of every country especially developing ones. In order to sustain in the knowledge based economy and deal with the demand of job market, incorporation of competency based curriculum is emerging as a necessity in the technical and vocational skill sectors. CBT is gaining hold as a solution to address the challenges associated with the current time-based training models. CBT is an outcomes-based approach that involves identifying the abilities required and then designing the curriculum to support the achievement and assessment of these competencies. Competency models developed through intense research for specific discipline can serve as a guiding tool. This paper identifies the components of CBT methodology and to develop a format for designing CBT module.

**Keywords :** Curriculum, innovation, knowledge based education, competency based training.

#### Introduction :

The manufacturing environment is changing dramatically. The modern industrial revolution emphasizes greater productivity, value added activities and business. With the advancement of technology, it becomes difficult to find the talent with the skills to use it. Demand exists for well trained, skilled employees, but a limited supply appears to be available. The solution won't come from a single place. The topic requires a much broader perspective. The change will happen with the collaboration of employers, educators, associations, governments, and policy makers. As a result, the modern industrial sector is quite a knowledge intensive and its demands highly skilled manpower. Again, skilled workforce with the potential to be entrepreneurs will certainly create rural employment. Hence there is a need to change the focus from training inputs to training outcomes, i.e., training to ensure achievement of agreed learning outcomes in the relevant occupational field.

The state of the economy of India during the yester years of independence reveals that India has always been an agrarian country. It had the weak industrial background, low level of savings, investments and near absence of infrastructure facilities. With the fast growing world, the growth of manufacturing organisations has become indispensable for India to keep up with the pace of the rest of the world. Growing population has led the organisations to experience the pleasant task and tension of a four-fold increase in the demand for their products and services. Consequently, the emphasis has shifted to the ultimate and inevitable goal of growth and performance; which can exist only if the employees are focused on the goals of the organisation.

Hay Group, (2004) pointed out that an organisation's best source of competitive advantage lies with its employees. Vathanophas and Thaingam, (2007) have mentioned in their earlier work that the demand for effective and competent employees is continuously increasing in both public and private organisations. The employee competence and commitment largely determines the objectives that an organisation can set for itself. It also determines the success in achieving the set objectives. Training is an appropriate tool which enhances employee competence ensuring achievement of organizational goals and objectives.

The key objective of introducing Competency Based Training (CBT) into Technical and Vocational Education and Training (TVET) is to improve the efficiency of the workforce. The essence of CBT is that it is focused on the end product on what a person can do as a result of

Corresponding Author's E-mail ID : dibyendu.datta@nift.ac.in



training (i.e., the outcome), the emphasis on doing things to show competency, rather than just knowing about them and hence there is a shift away from the emphasis on the process involved in training (i.e., the inputs). The table below compares between the old paradigm TVET and the new paradigm CBT system.

Tahlo 1	Old and	Now Para	adiam of	Training
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S.No.	Old Paradigm TVET	New Paradigm CBT
1	Passive learners	Active learners
2	Exam-driven	Learners are assessed on an ongoing basis
3	Rote learning (is a memorization technique based on repetition)	Critical thinking, reasoning, reflection, and action
4	Syllabus is content-based and broken down into subjects	An integration of knowledge, skills and attitude/value, learning is relevant and connected to real-life situations/real work situations
5	Textbook/worksheet bound and educator-centred.	Learning materials/training packages, learner-centred; educator/trainer is a facilitator
6	Educator/trainer uses 'deductive' approach in teaching	Facilitator uses 'inductive' approach in facilitating
7	Sees syllabus as rigid and non- negotiable	Learning programmes are seen as guide that allows facilitators to be innovative and creative in designing programme
8	Educators responsible for learning; motivation dependent on the personality of educator	Learners take responsibility for their learning: learners are motivated by constant feedback and affirmation of their worth
9	Emphasis on what the educator hopes to achieve	Emphasis on outcomes (what the learner becomes and understands)
10	Content organised according to rigid time-frames	Flexible time-frames allow the learner to work at their own pace
11	Curriculum development process is not open to public comment	Comment and input from the wider community/stakeholders is encouraged

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Competency consists of combinations of Knowledge (K), Skills (S) and Attitudes (A) executed, transferred and applied in the workplace to achieve agreed outcomes. This definition of competency has significant implications for the trainers and also for the trainees in the achievement of competencies. It is far beyond the conventional word 'training' that develops simple (or complex) manual skills but also involves knowledge, reasoning and a positive and responsible attitude towards one's role in the workplace. In CBT programs, the trainees need to know, from a very early stage in the process, exactly what is eventually going to be required of him or her, primarily so that he or she can begin to prepare mentally, emotionally and physically to perform at the level required for competency. So, to conduct CBT program requires a shift from traditional teaching to flexible delivery and learning. The self-paced and flexible structure of CBT encourages trainees to become responsible for their individual learning process. As the learner has more responsibility for the learning process, the trainers must be able to support and guide the individual by offering appropriate learning materials and facilities as well as assessment procedures. The entire process enhances capacities of trainers in adapting innovative training approaches to address youth development and sustainable practices in manufacturing sectors.

A number of Indian organisations have attempted to use competency modelling as a part of human resource management function in the last three decades. Many organisations were successful in implementing competency based system yet, others were unable to relate it to the existing operations and scenario for training and development. Several types of research highlight the problems in developing competency models as identified by Esque and Gilbert, (1995); Marrelli, (1998); Thomas, (2000); Langdon and Marrelli, (2002) have questioned the applicability of competency models as these models are based on behaviours, not accomplishments. There is often disagreement between the process and the terms used to define competencies. Practitioners have referred competencies being broadly defined, ambiguous and subjective. In spite of criticisms researchers like Byham, (2002) expressed that the first and most important step in designing the management development programmes is 'determining the competency model of managers'.

#### Competency Based Training Methodology :

CBT is an industry and demand driven (outcomes-based) education and training programme based on well



defined industry generated standards (occupational standards). These industry standards are the basis upon which the program (curriculum), assessment and learning materials are designed and developed. CBT programmes focus on what the participant is expected to be able to do in the workplace as opposed to just having theoretical knowledge. It is, therefore, a training programme which ensures that learners gain the necessary knowledge, skills and attitudes or values to be successful in the working environment.

CBT is associated with a group of non-traditional learning models. Some of these models are identified under titles such as criterion referenced instruction, mastery learning, performance-based instruction, programmed learning, open learning and independent learning. They have several key principles in common but consistent with the view expressed by Blank (1982) a competency based system must contain the following elements :

- 1. competencies or duties to be attained are clearly stated as performance objectives;
- 2. programs are modularized, containing self-instructional activities to enable trainees to direct their own learning at their own pace;
- programs contain a variety of learning resources to enable trainees to choose those resources which are likely to assist their learning;
- 4. mastery of competencies is assessed by demonstrated performance in the actual job situation, according to prescribed criteria.

CBT is a systematic approach to learning. It recognizes the innate capability of people to learn consistently and at ever increasing levels, providing they have the desire to learn and suitable resources to assist them. The system emphasizes performance. There is a considerable difference between knowing how and knowing that. In CBT, trainees practice tasks so that they experience learning and when they are ready they demonstrate their competence. If they are not completely successful at the first attempt, they repeat the performance until they master it. The system is not about failure. It is about people learning to perform a job properly, to specification, at which stage they *know that* they are competent.

CBT in any occupational field needs careful planning and continuous monitoring of different development steps involved in the process. In order to define competence standards by translating work- based requirements into nationally endorsed industry standard, experts in the

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relevant field should be able to depict essential work activities, tasks, and functions with respect to a specific competence profile. Again, the forms of delivery and assessment need to be specified in accordance with the respective training provider. Information on assessment requirements and procedures must be clearly documented and trainers have to be efficient to assure the quality of outcomes and learning processes.

The CBT approach to teaching and learning is currently gaining popularity among many stakeholders. The ideas of competency are spreading far beyond a single discipline and have been accepted by almost everyone (Butova, 2015). The piloting of CBT concept of teaching in some selected programmes in the various educational institution has indeed had many successes and challenges as well. CBT has greatly improved the employability skills and is also helping to address the shortages of skilled workers required to feed the industry as the economy improves.

The following table represents the various phases and steps involved in modeling of Competency Based Training Methodology :

S. No.	Phase	Step involved	Outcome	
		Conduct Job Analysis	<ul> <li>Identify the Job Functions and Tasks to be performed by the person in the specified job role</li> </ul>	
			<ul> <li>Prepare chart to indicate responsibilities and tasks</li> </ul>	
		Select tasks for training	Set priorities of tasks for training	
		Analysis Conduct task analysis	Identify Unit Competencies required for performing each task.	
1 Analysis	Analysis		Determine Elements of Competencies required for the development of each Unit Competency.	
			<ul> <li>Identify underpinning Knowledge (K), Skills (S), and Attitude (A) required for the development of each element of competency.</li> </ul>	
			<ul> <li>Identify tools/equipment and other factors needed for performing each task.</li> </ul>	
			Identify performance standards.	
			Prepare a detailed document on task     analysis for training design.	

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S. No.	Phase	Step involved	Outcome
		Decide pre training requirements of trainees	List pre-requisite competencies of trainee
		Select mode of training	Explore possibilities of training approaches.
		°	<ul> <li>Identify effective training approach</li> </ul>
	-	Davidan Laaming Objectives (10)	Prepare LOs from task analysis for each     element of competency.
		Develop rearining objectives (ros)	Map to ensure LOs to reflect actual job requirements
2	Design		Prepare PC from task analysis for each     element of competency.
	2 Design	Develop Performance Criteria (PC) and correspondence range	Write range statement for performance     criterion as applicable.
		statement	• Verify desired K, S, A.
			Map to ensure PC and corresponding range statement to reflect actual job requirements.
			Identify effective learning strategies and methods for imparting necessary training.
		Plan Learning Activities	<ul> <li>Schedule learning activities for development of desired K, S, A under each element of competency.</li> </ul>
		Develop Learning Materials	Identify learning module, aids, on-job support tools for imparting effective training
			<ul> <li>prepare a manual for trainees.</li> </ul>
3	Develop	Develop Instructor Materials	<ul> <li>prepare training guides</li> </ul>
		1	<ul> <li>prepare lesson plans</li> </ul>
		Study as pilot test	<ul> <li>offer training as pilot project</li> </ul>
			<ul> <li>revise training as per requirements</li> </ul>
			Provide training as per revised plan
		Conduct Training	<ul> <li>Provide reedback to facilitate the learning process</li> </ul>
			Provide sufficient practice opportunities
			Use effective assessment tools for     ovidence based evaluation
4	Implement		Conduct formative assessment to provide
			feedback for improvement
		Conduct Iraining Assessment	<ul> <li>conduct summarive assessment to ensure achievement of desired performance</li> </ul>
			criteria Destes testes en la classica de
		Kevise training to reflect required     improvement	

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The design and development phases of CBT are collectively referred as curriculum development.

#### Need for Competencies in Organizations :

Competency based approach to human resource management has become integral during the last thirty years, with 'Competency' concept involving knowledge, skills, attitude, traits, and behaviours that allow an individual to perform a task within a specific function or job (Boyatzis, 1982). In the present scenario where job availability is at a very crucial state with an elevated need for effective low cost employees, organisations are unsuccessful in finding capable employees. As the level of competency in a person affects one's behaviour which leads to the incongruity of performance, the organisations desire a certain level of required competency in its employees for specified job posts. The resultant of a critical behaviour is higher performance. The level of performance (low, moderate or high) is always determined by the level of knowledge, skill, and attitude. (Figure 1).



Figure 1: Concept of Competency

The term 'Competency map' has gained a wide recognition in the business field (Brožová & Šubrt, 2008). Garrett, (2007) has explained competency map as a tool which defines the job demands. A competency map is a list of an individual's competencies that represent the factors most critical to success in given jobs, departments, organisations or industries that are part of the individual's current career plan (DACEE, 2008). Competency mapping is a process an individual uses to identify and describe competencies that are critical to success in a work situation or work role.

#### Advantages of CBT :

**In a CBT** program, both the employer and the employee benefit. Personal judgment and subjectivity are minimized, creating a more positive work environment and a stronger relationship between employee and



#### Since 1950

employer. This is a result of establishing transparent workforce planning, performance standards, performance assessments and succession plans.



Figure 2: National Skill Qualification Framework

There are some examples to share. Apparel Training & Design Centre (ATDC), India's Largest Quality Vocational Training Provider for the Apparel Industry are a vital part of the vocational training system for careers in apparel, fashion and textiles having a pan-India presence in and near Apparel-Textile Hubs, offering certificate, diploma and advance diploma courses. To attend to the ever increasing demand for degree courses, this MOU with AICTE will now facilitate ATDC to offer new generation B. Voc (Bachelors' in Vocational Education) at ATDCs across the country which are based on the NSQF that addresses critical knowledge and skill sets required to make the candidate 'industry ready' right from the start and also become a 'young-entrepreneur'." They offer two Programmes viz. B. Voc in Apparel Manufacturing & Entrepreneurship and B. Voc in Fashion Design & Retailing both having a suitable mix of general-education and skilldevelopment components based on the NSQF as per AICTE prescribed framework in collaboration with Rajiv Gandhi National Institute of Youth Development (RGNIYD), an Institute of National Importance through an Act of Parliament under Ministry of Skill Development.

Footwear Design and Development Institute (FDDI) under the aegis of Ministry of Commerce and Industry, Government of India, perform the role and function of providing hands-on skill training in leather, lifestyle product design & development and related areas as per the training modules under the NSQF.

The Leather Sector Skill Council (LSSC) located at Chennai, is a non-profit organisation dedicated to meet the demand for skilled workforce in the leather industry in India. LSSC was set up in 2012 as one of the key sector skill councils approved by NSDC catering training and Article —

employment needs of various sub-sectors in the leather industry such as finished leather, footwear, garments, leather goods, accessories, saddlery and harness sectors. LSSC works in partnership with Council for Leather Exports (CLE) and with a host of members from the industry, government organizations, the academia, the training partners and the assessment partners.

TimesPro is an education initiative by The Times of India Group expertise in Banking and Finance Industry with an aim to revolutionize professional education in India ties up with Jagannath University for a 3 year specialized Bachelor program in Banking and Finance. The programme is centered around competency based learning following the NSQF methodology to hone up skill-sets and make career-ready workforce.

The Medical Council of India (MCI) has already started implementing their plans to introduce Competency Based Medical Education (CBME) in India 'a system of teaching medicine which has been very successfully implemented in many developed and developing countries around the world. CBME is a paradigm shift from the traditional way of discipline based imparting of skills and knowledge'.

School of Vocational Education Training (SOVET) of Indira Gandhi National Open University (IGNOU), a world leader in distance education mentions that Open and Distance Learning (ODL) can also contribute significantly in Recognition of prior learning (RPL) and its certification through NSQF.

Practical training has become extremely important. Competency based learning is the next best way to educate our future generation and will not be a success unless there is a relentless effort on the part of Indian schools, administration and teaching force at large.

#### Conclusion :

Technological development depends on its scientific and technical manpower; its application also depends on it. Higher productivity is due to advancement and improved utilization of new technology. However, behind all this, there is a competent workforce delivering high quality services. Paul J. Meyer, Founder, Success Motivation Institute, USA, appropriately says that productivity is never an accident. It is always the result of a commitment to excellence, intelligent planning, and focused effort. Our future development thus depends



on competitiveness and innovation, skills and productivity and all these entirely depends on the collaborative efforts of education, training, skill and dedication of manpower. CBT emphasizes on performance excellence, as a result, each individual understands how to achieve the expected performance standard(s). The trainee also demonstrates the competence at the set tasks. It is learner centered in the sense that trainees learn at their own pace & are provided with sufficient opportunities for practice. Further, the step-by-step approach to develop competencies is an added advantage. With the emerging challenges in all the industrial sector, CBT becomes more important because the trainees can appreciate the learning outcomes beforehand and are focused towards their attainment. Hence, CBT is very much relevant to the sustainability of workforce in today's workplace.

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# \_\_\_\_\_STAHL Corner\_\_\_\_\_





# \_\_\_\_\_STAHL Corner\_\_\_\_\_





## Effluent Water

#### Dinker Bajpai

#### LEATHER TECHNOLOGIST, BUREAU VERITAS CONSUMER PRODUCTS SERVICES INDIA PRIVATE LIMITED C-19, SECTOR-07, NOIDA-201301 (U.P.), INDIA

Tannery industry process Tannery operations involve conversion of raw hides or skins into leather, a stable material, which can be used for manufacturing of large number of products. The tannery industry is a water and chemical intensive industry, wherein, a large number of complex chemical and mechanical processes are involved. These industries are one of the most polluting industries causing pollution in the environment. The Tannery Industry Operation is as follows: Process in tanning industry can be broadly classified as pre-tanning, tanning and post tanning process. Pre tanning is employed mainly for the removal of impurities from the raw materials. The impurities consist of mainly blood, hairs, etc., which has composition of protein. This process involves salt, lime and sulphides as process chemicals. Tanning process is used for altering the characteristics of skin. The effluents of tannery process contains chromium and vegetable or synthetic tanning. Post tanning processes include colouration and produce effluents containing residues of dyestuffs, and auxiliary chemicals. The final effluent coming out of a tannery unit is amalgam of raw materials and variety of process chemicals. As the main raw material of the tanning industry is a natural product, its soluble impurities are generally readily biodegradable and represent a large part of the BOD load in the effluent. The process chemicals employed are a variety of organic and inorganic materials affecting concentration of total solids, pH, COD. Of particular importance is the presence of significant quantities of sulphide and chromium (III).

Indian Scenario In India there have been some initiatives from government and international institutions to promote clean techniques. Most of the CETP operators in India are aware of some of the technologies mentioned as BAT, since they were also being applied in India. A wide spectrum of activities is found that promote cleaner production.

The activities include :

• Helping to import less environmentally damaging tanning material such as wattle extract, benefiting a large number of smaller tanners

- Adopting "zero liquid discharge" technology in tanneries regulated by the state of Tamil Nadu
- Guidance from the Central Leather Research Institutes CLRI), Chennai and other technical bodies on the management of hazardous solid waste in secured landfills A few organizations are involved in demonstration and training for adoption of new technologies in :
  - Effluent treatment
  - Waste minimization
  - Replacement of chemical dyes with natural dyes
  - Cleaner tanning techniques for raw skin as well as for the whole leather production process
  - Chrome recovery technology; use of less chrome or chrome less technologies; chrome recycling and reuse methods should be prioritized
  - Chilling preservation instead of salt treatment of hides A few of the institutions have been involved in the development of ideas and e modification of new technology to the requirements of the leather industry.

Primary treatment Industrial wastewater, after the primary sedimentation tanks, sometime (when the organic load - COD - is very high) is introduced in the intermediate chemical treatment compartment where aluminium sulphate and poly-electrolyte solutions are dosed for flocculation and coagulation. The flocculated effluent enters into the circular tank for solids removal and then into biological treatment. Secondary treatment The biological process includes de-nitrification (first step) and biological oxidation and nitrification (second step). The Nitrate removal (de-nitrification) is performed into an anoxic tank in which primary treated industrial effluent and urban waste waters are blended with the mixed aeration liquor and sludge of the biological phase continuously re-circulated. The mixing is provided by a series of submersible mixers. The oxygen for the biological oxidation (BOD/COD removal and Ammonia nitrification) is provided by air injection (blowers and membrane

Corresponding Author's E-mail ID : dinker.bajpai@in.bureauveritas.com/dinker1986@gmail.com



diffusers). For enhancing COD removal, Activated Carbon is dosed in the oxidation tank. The mixed liquor (effluent and biological sludge) enters the biological sedimentation tanks where settled sludge is continuously re-circulated to the de-nitrification tanks. The excess of sludge is periodically discharged and by-passed to the sludge treatment. The supernatant liquid of the biological clarifiers flows by gravity to the tertiary chemical treatment. The dosed chemicals are Fe-salts, Lime and Polyelectrolyte. The quantity of chemicals varies according with the characteristics (SS and COD) of the effluent from the biological treatment (see Note). Note: The typical COD and SS of the effluent from the biological sedimentation are 250-300 mg/L and SS 200-220 mg/L respectively. The tertiary treatment is therefore required for complying with the discharge standards.

6.	LEATHER TANNERIES		Cor exc for	centration in th eed milligramme pH and per cent	tion in the effluent not t illigramme per litre (except d per cent sodium)	
		Inland Surface Waters	Public Sewers	Land for Irrigation	Marine Coasta areas	
		(a)	<b>(b)</b>	(c)	(d)	
	Suspended Solids	100	00	200	100	
	<sup>3</sup> [BOD 3 days at 27°C]	30	350	100	100	
	pII	6.0 - 9.0	6.0 - 9.0	6.0 - 9.0	6.0 - 9.0	
	Chlorides (as Cl)	1000	1000	200	•	
	Hexavalent Chromium (Cr+6)	0.1	0.2	0.1	1.0	
	Total	2.0	2.0	2.0	2.0	
	Chromium (as Cr)					
	Sulphides (as S)	2.0	5.0	-	5.0	
	Sodium percent	-	60	60		
	Boron (as B)	2.0	2.0	2.0	-	
	Oil & Grana	10	20	10	20	

11-1-

Substituted by Rule 2 of the Environment (Protection) Amendment Rules, 1996 notified by G.S.R.176(E), dated 2.4.1996 may be read as BOD (3 days at 27°C) wherever BOD 5 days 20°C occurred.

Effluent Guidelines are national regulatory standards for wastewater discharged to surface waters and municipal sewage treatment plants. EPA issues these regulations for industrial categories, based on the performance of treatment and control technologies.

Effluent, in engineering, is the stream exiting a chemical reactor. Effluent is defined by the United States Environmental Protection Agency as "wastewater - treated

## Article —

or untreated - that flows out of a treatment plant, sewer, or industrial outfall. Generally refers to wastes discharged into surface waters".

#### What is meant by industrial effluent ?

Industrial wastewater treatment covers the mechanisms and processes used to treat wastewater that is produced as a by-product of industrial or commercial activities. After treatment, the treated industrial wastewater (or effluent) may be reused or released to a sanitary sewer or to a surface water in the environment.

#### What are the principal waste waters associated with mines and quarries ?

The principal waste-waters associated with mines and guarries are slurries of rock particles in water. These arise from rainfall washing exposed surfaces and haul roads and also from rock washing and grading processes.

#### What is the PH of wastewater ?

pH refers to the acidity of the effluent. Domestic wastewater before treatment typically has a pH of 6.5 to 8.5, but a final effluent of 7.0-7.2.

#### What is meant by industrial waste ?

Industrial waste is the waste produced by industrial activity which includes any material that is rendered useless during a manufacturing process such as that of factories, industries, mills, and mining operations. It has existed since the start of the Industrial Revolution.

#### How to deal with hydrogen sulphide gas (in tanneries and ETPs)



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mbared as (1) by Notification No.S.O.12(E), dated 8.1.1990 : 2 to 7 inserted by Notification S.O.12(E), dated 8.1.1990 and omitted by G.S.R.176(E), dated 2.4.1996 maf 3 4 1996



#### Since 1950

Hydrogen supplied gas present in tanneries and effluent treatment plants (ETPs) has proven fatal to workers exposed to it many times.

It is therefore necessary that the owners and managers of tanneries and effluent treatment plants are fully aware of the dangers posed by this poisonous gas and take all preventive and precautionary measures to protect the workforce from exposure to this gas. In the event of accidental exposure of a worker, they should know how to deal with the situation.

Leather processing has as one of its important objectives, improvement of occupational safety and health practices in tanneries and effluent treatment plants. Under this objective, the project has been seeking to demonstrate in selected tanneries improvement practices for better occupational health and safety of the workers.

It is hoped that the industry representatives and other concerned with the occupational health and safety of workers in tanneries and effluent treatment plants will find this publication useful.

Article —





## Production of Proteolytic Enzymes Using Leather Wastes

M. Sivaparvati, V. S. Segaran and Mahadeswaraswamy

Central Leather Research Institute Adyar, Madras 600 020

#### Introduction

OLID tannery wastes like Ochrome and vegetable tanned shavings and trimmings amount to more than 10% based on the dry weight of the hides or skins. Disposal of solid wastes causes pollution problems due to the toxicity of chromium to living organisms. The conversion of solid wastes into useful products or to a less hazardous products will solve the environmental pollution problems. Hydrolysis of vegetable tanned wastes1-2 and chrome tanned wastes 34 was reported earlier, purification and properties of protease produced by Pseudomonas aeraginosa causing hydrolysis of chrome shavings was reported by Sivaparvati et alo. The role of proteolytic enzymes in the solubilization of chrome shavings was reported by Taylor et al67. In this present study an attempt has been made to produce proteolytic enzymes using leather wastes by fungal strains which are generally associated with tanned leathers

#### Experimental

Chrome and vegetable shavings were collected from tannery, dried an taken in 0, 15%, K<sub>z</sub>H

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PO<sub>4</sub> solution (150 mg/25 ml) sterilized by autoclaving at 10 lbs for 10 min and inoculated with cultures and incubated at 30°C. After incubation period cultures were filtered and filtrate was examined for proteolytic enzyme.

#### Estimation of proteolytic activity

Proteolytic activity was estimated according to the method of Anson's<sup>#</sup> as modified by Sivaparvathi et al<sup>9</sup>. Egg albumin was used as the substrate. Proteolytic activity has been expressed as the Mg. of tyrosine liberated from 4 ml of digestion mixture.

#### **Result and Discussion**

Aspergillus niger Aspergillus fl 1948, Aspergillus terreus, Asper gillus ind dans, Paecilomyces

Penicillium frequen-Varioti tans and Penicillium purpurogenum which are generally associated with the leathers were screened for the production of enzymes using proteolytic vegetable and chrome tanned wastes as substrates. Of all the strains screened A. flavus is found to produce maximum proteolytic enzyme and further studies are carried out with this strain.

Effect of incubation period on the production of proteolytic enzyme: A. flavus was inoculated to vegetable and chrome tanned shavings in  $K_2$  HPO<sub>4</sub> solution autoclaved for 10 min at 10 lbs pressure and incubated for 12 days and proteolytic enzyme production was estimated at intervals and the results obtained are recorded in Table 1.

#### TABLE-I

Effect of incubation period on the production of proteolytic enzymes by A. flavus using leather wastes

Incubation period (days)	Vegetable tanucd wastes (P.A)*	Chrome tanned wastes (P.A.1*
3 6 9 12	0.040 0.092 0.167 0.150	0.024 0.067 0.090 0.077

P.A\*-Mg of tyrosine liberated from 4 ml of digestion mixture

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It is apparent from table I that proteolytic enzyme production by *A. Flavus* using leather wastes as substrates is optimum after 9 days of incubation period.

#### Effect of temperature

Vegetable and chrome tanned shavings in  $K_2$  HPO<sub>4</sub> solution are inoculated with *A. flavus* and incubated at 25, 30, and 37°C for 9 days and filterate was estimated for proteolytic activity and it was found that optimum temperature for production of enzyme is 30°C.

#### Effect of pH on the proteolytic enzyme production

The pH of the K<sub>2</sub>HPO<sub>4</sub> solution was adjusted from 4.0-9.0 and vegetable and chrome tanned shavings were added autoclaved at 10 lbs for 10 min and inoculated with A. flavus after 9 days of incubation period at 30°C cultures are filtered and proteolytic enzyme in the filterate was estimated, Proteolytic enzyme production as influenced by pH is shown in Table II.

The data presented in Table II show that the optimum pH for the production of enzyme using vegetable tanned shavings is 8.0 and chrome tanned shavings is 7.0.

#### Effect of substrate concentration on the production of proteolytic enzymes

Substrate concentrations ranging from 0.5-3.0% were taken

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in  $K_{9}HPO_{4}$  solution and autoclaved at 10 lbs for 10 min, inoculated and incubated at 30°C for 9 days and culture filtrate was estimated for proteolytic enzyme production and the data obtained is presented in Table III.

The results presented in Table III shows that *A. flavus* was able to produce more proteolytic enzyme when grown on 1.0% substrate concentration both in vegetable and chrome tanned shavings as substrates.

## Effect of heat treatments on the production of proteolytic enzymes

1.0% vegetable and chrome tanned shavings were taken in  $K_2$ HPO<sub>4</sub> solution and given heat treatments like boiling for 10, 20, 30 min and autoclaving for 10 min at 10 lbs and incubated

TABLE-1	TΑ	в	L	E	_	I	I	
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Effect	of	pН	on	the	production	of	proteolytic	enzymes	hy
				A. fla	was using leat	ther	wastes		-

рН	Vegetable tanned wastes (P.A)*	Chrome tanned wastes (P.A)*
4.0	0.106	0 094
5.0	0.127	0.102
6.0	0.142	0.122
7.0	0.164	0.187
8.0	0.190	0.084
9.0	0.154	0.013

P.A\*-Mg of tyrosine liberated from 4 ml of digestion mixture

#### TABLE-III

Effect of substrate concentration on the production of proteolytic enzymes using leather wastes

Substrate concentration %	Vegetable tanned wastes P.A)*	Chrome tanned wastes (P.A)*
0.5	0.150	0.078
1.0	0.220	0,106
2.0	0.125	0.098
3.0	0.040	0.022

P.A\*-Mg of tyrosine liberated from 4 ml of digestion mixture

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## – Down Memory Lane \_\_\_\_\_

for 9 days at 30°C. After incubation period cultures were filtered and filterate was analysed for proteolytic enzyme and results obtained are recorded in Table IV.

The data presented in Table IV shows that maximum proteolytic enzyme is produced when both vegetable and chrome tanned shavings were autoclaved at 10 lbs for 10 min.

#### Summary

The present investigation reveals that proteolytic enzymes can be produced from leather wastes using fungal strains. A. flavus was able to grow on the leather wastes and hydrolyse them by producing proteolytic enzymes under optimum conditions of autoclaving for 10 min at 10 lbs pressure, 9 days of incubation perion, temperature 30°C, pH 7.0-8.0 and substrate concentration of 1.0%. It has been observed that more proteolytic enzyme is produced when vegetable tanned wastes are used as substrates instead of chrome tanned wastes.

#### TABLE-IV

Effect of heat treatments on the production of proteolytic enzymes using leather wastes

Heat treatments	Vegetable tanned wastes (P.A)*	Chrome tanned waste (P.A)*
Boiling for 10 min	0.057	0.037
Boiling for 20 min	0.066	0.044
Boiling for 30 min	0.075	0.059
Autoclaving at 10 lbs for 10 min	0.162	0.090

P.A\*-Mg of tyrosine liberated from 4 ml of digestion mixture

#### Acknowledgement

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## Press Release

## **TFL COLOUR TRENDS**

### RELEASE OF THE NEW TFL COLOUR TRENDS CATALOGUE AUTUMN-WINTER 2019-20

TFL has released its new TFL Colour Trends Catalogue for the season Autumn-Winter 2019-20. In the catalogue, TFL presents the colour trends for the leather garment, footwear, accessories and additionallyfor the upholstery industry.

The colour trends are divided into "Wearing" and "Living", devoting a section to each within the publication. Wearing comprises inspirations and colour trends for garments, footwear and accessories.

The Living section features all colours that will decorate the season's interior designs.

In "Wearing", influenced by high-tech fabrics, clothing leathers are transformed into real full weather protection and in footwear suede leathers are printed with animal designs such as African zebras, bison or gleaming Arab horses. Sunny yellow and various brown, orange and green tones are the main colours of the season.

In "Living" a technological mix of carbon fibres and tearresistant full-grain calfskins for seating, ensures absolute comfort combined with extraordinary visual effects. Thanks to newly developed systems a multitude of brilliant, clean and vivid colours such as yellow, red and pink are entering into our living space.

In addition, we introduce the aqueous high-gloss PU's for top coat RODA® Pur 5805/N2 and RODA® Fix 5090.

The TFL Colour Trends Catalogue is now available. For further details please have a look at <u>www.tfl.com</u>.





## News Corner\_

# WEST BENGAL GOVT. OFFERS LAND FOR FOOTWEAR PARK IN THE STATE

The West Bengal government has extended support to the proposed footwear park in the state by offering 130 acres of land for the project, industry body Council of Leather Exports said today.

"The West Bengal government has agreed to support the project by offering 130 acres of land at Bantala leather complex. The footwear park will attract an investment of Rs 1,000 crore," Council of Leather Exports chairman Ramesh Juneja said here.

"The state government has directed the Kolkata Metropolitan Development Authority to construct the new effluent treatment plant and revamp the drainage system to felicitate the footwear complex. It will cost around Rs 100 crore," he said.

He said that the government wants leather sector business in state to increase five times to Rs 50,000 crore in the next five years.

"Bengal once held an important place in footwear industry clocking about 18 per cent share in exports. Now it has become nil," Juneja said.

Beside, Footwear Park another leather goods park would also be constructed and 110 acres in Bantala will be allotted by the government, he added.

In 2014-15, Indian leather sector exports was at USD 6.5 billion. "Till December exports was USD 4.4 billion but till March exports could remain at USD 5.5-6 billion," the chairman said.

Meanwhile, the Indian Leather Products Association leather B2B show at Milan mela was inaugurated today which will go on till March 20. PTI BSM MD ABI

(PTI - 18/02/2018)

## 77% OF INDIAN WORKERS WILL HAVE VULNERABLE EMPLOYMENT BY 2019; ILO REPORT

The death of 17 workers trapped inside an illegal firecracker warehouse that caught fire in Bawana

Industrial Area of Delhi on 20 January is only among the recent examples of the tragedies caused by vulnerable employment.

But a new report by the International Labour Organization (ILO) says that 77% of Indian workers will be engaged in vulnerable employment by 2019. This is in keeping with what labour experts in India have been cautioning against for years now – the alarming increase in the turn towards vulnerable forms of employment.

In fact, there is a rise the world over in vulnerable employment, as noted by the ILO report. Globally, around 1.4 billion workers are estimated to be in vulnerable employment on 2017, with an additional 17 million expected to join per year in 2018 and 2019.

'Vulnerable employment is characterized by meagre earnings (below minimum wage), difficult and insecure working conditions (for example, workers are made to work long and taxing shifts; they can be hired and fired without notice at any point), unsafe work environments, and complete violation of labour laws'.

The workers at the Bawana factory, for example, were being paid a paltry Rs 150-200 per day for a 10-hour work shift, without any other benefit or social security, while all labour laws and safety norms were obviously being violated.

However, the ILO report – titled World Employment and Social Outlook ; Trends 2018 – defines 'vulnerable employment' narrowly as the sum of own-account workers [self-employed without paid employees, usually a oneperson enterprise] and contributing family workers.

But most labour experts and economists in India define 'vulnerable employment' as encompassing contractual workers in the organized sector as well as workers in the unorganized sector.

Speaking to Newsclick, Satyaki Roy, Associate Professor as the Institute for Studies in Industrial Development, said that according to the Annual Survey of Industries (ASI) data between March 2014 and July 2015, total employment was on the basis of contracts.

Now, the NSSO divides the unorganized manufacturing sector was concerned, the only segment that recorded a rise in employment was the Own Account Manufacturing Enterprise (OAMEs). As per the NSSO survey on Unincorporated Non-agricultural Enterprises (excluding construction) for the period between 2010-



11 and 2015-16, the employment in OAMEs saw a rise of 1.84 million.

Meanwhile, employment in the other two segments in the unregistered manufacturing enterprises declined by 0.67 million.

#### (Culled from Net)(NC)

# LEATHER INDUSTRY HOPEFUL OF 10% EXPORT GROWTH

Export of leather and leather products, which was on the decline for the last two years, is seeing signs of revival.

The exports grew 1.48 percent at \$4,388 million between April and December 2017 as opposed to \$4,324 million for the same period in 2016 due to a revival of demand in the EU.

Addressing media persons prior to the 33<sup>rd</sup> edition of Indian International Fair to be held here from February 1 to 3, Mukhrtarul Amin, Chairman, Council for Leather Exports, said the industry expected exports to grow 3-4 percent in the next few months and reach 10 percent growth by the end of this year.

"While the EU is the largest market for leather goods, the focus has shifted to other markets such as the US," he added.

Indian leather exports to the US have grown from 8 percent to 15 percent in the last couple of years. "But the potential is huge as our market share is barely 1-2 percent," he added.

The CLE has tied up with Footwear Distributors and Retailers of America to further increase its market share. Russia, which is the 12<sup>th</sup> largest global importer of leather and leather products, is another focus area.

"All these initiatives will help us reach 10 percent growth rate next year," Amin added. The Centre has approved an outlay of Rs.2,600 crore for employment generation in the leather industry. As part of the initiative, four mega clusters that will house tanneries, leather goods and footwear manufacturing units and training centres are coming up in Andhra Pradesh, Haryana, West Bengal and Uttar Pradesh.

# GOVT UNVEILS RS. 2,600 CR LEATHER & FOOTWEAR INDUSTRY PACKAGE

Chennai, Jan 30 (PT) : Union Minister Suresh Prabhu today unveiled the Central Governments Rs.2,600 crore package for the leather and footwear industry, saying it had the potential of generating over three lakh jobs and formalizing another two lakh in the next three years. The Union Cabinet had last month okayed the package for employment generation in the leather and footwear sectors, with an approved expenditure of Rs.2,600 crore over three financial years from 2017-18 to 2019-20.

"The special package has the potential to generate 3.24 lakh new jobs and assist in formalization of two lakh jobs in three years. This is about half a million jobs (overall)," Prabhu, Minister for Commerce and Industry, said after inaugurating the 33<sup>rd</sup> India Industry International Leather Fair (IILF) 2018 here. Underlining the Centres commitment to the leather, he said the government wanted to set up mega leather, footwear and accessories clusters and would provide infrastructure support in this regard.

Prabhu, who pointed out at the implementation of Common Effluent Treatment Plants (CETP) in Tamil Nadu, especially for the textile sector in Tirupur, assured to provide assistance for upgradation and installation of such facilities for the leather industry also, as it would ensure that the traditional sectors works in an environment friendly manner. On the exports front, he said there has been a decline, but that efforts were on to "re-engage" with global countries, and added that India should be part of a global supply chain. Exports should contribute towards at least 40 percent of India's GDP, he added. For this purpose, there should be increased focus on the Make in India concept, with products being designed, developed and manufactured from the country, as only such efforts would boost exports, Prabhu added. The three-day fair starting from tomorrow will see the participation of about 500 exhibitors from 22 different countries.

# LOWER MINIMUM EMPLOYMENT RULE TO SPUR JOBS ; LEATHER SECTOR

The leather industry has welcomed the Budget proposal to cut the minimum period of employment.

The new norms mandate 150 days minimum period of employment in the footwear and leather industry, as has been the case for the apparel sector. Earlier, it was 240 days. The move is aimed at creating new employment opportunities. Union Finance Minister Arun Jaitley said in his Budget speech.



## News Corner\_

"The Centre has made these changes along with certain amendments to Employment Provident fund Act to encourage employment of more," said Rafeeque M Ahmed, President, All India Skin and Hide, Tanners and Merchants Association.

"Earlier this relaxation was available to the textile sector and the anomaly has been set right."

(Hindu, Chennai: 03.01.2018)

#### LEATHER INDUSTRY TO FOCUS ON NEWER MARKETS

Facing stiff competition from Bangladesh and Vietnam on export of leather goods, the Council for Leather Exports (CLE), today said it was eyeing newer markets to boost the trade volume. "We export leather to various countries, with a majority of it to Europe, We are facing stiff competition from Bangladesh, Vietnam. Hence, we plan to focus on newer markets like United States, Russia," CLE Chairman, Mukhtarul Amin told reporters here. Elaborating further, he said the Government of Bangladesh has set a target of USD 5 billion.

"They have also announced cash assistance (incentive) on exports of leather products. Initiatives like these are a threat to our exports," he said. CLE, represents the traders community. Vice-Chairman of CLE P R Aqeel Ahmed said about 50 leather traders would take part in a leather expo scheduled to be held in Moscow in March. "The focus is on newer markets like Russia, United States of America. We are also discussing with Footwear Distributors and Retailers of America (FDRA) to enhance trade," he said. To a query, he said there was a proposal to tap markets in Central America, Africa apart from Russia and United States.

Responding to another query, he said the leather exports which earlier recorded de-growth in the last four years have recorded a 1.48 percent growth in the April-December 2017 period as compared to same period of last year. "Our aim is to register 10 percent growth in the coming financial year (2018-19)," he said. Top officials of Council for Leather Exports and Indian Trade Promotion Organization (ITPO) were here to announce the 33rd edition of three day India International Leather Fair (IILF) scheduled to begin from February one in city. "This year we are expecting participation of more countries than previous years. The third edition of the designer fair will be conducted along with IILF this time," Amin said. For the first time a raw material sourcing exhibition was also planned during three day meet, he said. "Raw material suppliers from various countries will be coming to take part in that event," he added.

# IN NOVEMBER, BRAZIL RECORDED A DROP IN EXPORTS OF FOOTWEAR

Data produced by The Brazilian Association of Footwear Industries (Abicalcados) indicate that in November, exported 9.88 million pairs of footwear were exported, which generated US \$83.43 million, lower numbers in both volume (-10.6%) and (-0.9%) in relation to the month 11 of last year. On a cumulative basis, from Jan to Nov, exports were positive in volume (+2.1%) and in value (+11.9%) in comparison with the same period of 2016. In the 11 months, 109.86 million pairs for US \$973.58 million were exported.

(Indian Leather Magazine, Jan-2018)



## LESSON ON LEATHER GOODS - Part III

Shome Nath Ganguly

Former Principal of Karnataka Institute of Leather Technology

(The purpose of this article is to advise the students as well as artisans engaged in leather goods industry. Shri Puranjan Mazumder of FREYA helped me to prepare this article)

This style of a bag was initially called "Gilda Hobo Bag" in 1936. The original Hobo bag was made of cloth. The hobo bag is a type of handbag or purse that is typically large and characterized by a semi-circular shape, a structure which is not stiff, and a long strap designed to wear over the shoulder. There are many different sizes and shapes of this popular handbag. It provides women with enough room to carry all their essential items such as a wallet, phone & cosmetic bag.

The hobo bag is very popular and can be often seen being used by celebrities. The length of the strap is often adjustable to maintain the length of the bag. Most women wear hobo bags on their shoulders, as opposed to holding the strap in their hand. Hobo bags are produced using soft, flexible materials such as soft leather, microfiber,



or suede leather. As a result, these bags tend to slouch or fold in on itself when you sit down or even when hanging from the shoulders.

Hobo bags have a casual appearance, they look great when paired with relaxed summer apparel that includes maxi sun dresses, skinny jeans or even cotton Capri pants. These bags come in different styles and colours appropriate for different occasions.

Large hobo bags are bulky and are not best suited to carry with office dress, particularly conservative suits or with very formal dresses. Instead, they are better paired with casual clothing. When choosing a hobo bag to use with formal attire, pick one that's smaller in size and is of solid colour without pattern.



## Commentaries <u></u>

# LEATHER RESEARCH INDUSTRY GET TOGETHER (LERIG - 2018) :

51<sup>st</sup> Leather Research Industry Get Together (LERIG - 2018) was organized by CSIR - Central Leather Research Institute during 29 - 30<sup>th</sup> January' 2018 at the Hotel Le Royal Meridian, Chennai.

The 51<sup>st</sup> LERIG introduced the state-of-art concepts in this area that Indian leather sector would consider for adoption. This encompassed both ecological and environmental factors, while keeping the consumer benefit as paramount. Leather sector is innovating by way of developing new products, chemical systems and reducing energy consumption, while maximizing raw material to leather/product turnover. Sustainability is the keyword for this whole system.

Hence, focusing on the Sustainability for the modern leather industries, the theme of LERIG – 2018 was rightly selected as "Sustainability of Leather & Allied Industries (SUSTAIN)".

It was unfortunate to be witness of the fact that the memorial lecture during Inaugural session to remember the Father of Indian Leather Industry, Prof. B. M. Das has been censored this year by the organizers.

Synopsis of the two day programme was as follows :-

Day 1:

- ø Inaugural session
- Ø Nayudamma Lecture

Day 2:

- Ø Technical Session I
- ø Technical Session II
- ø Technical Session III
- ø Technical Session IV
- ø Valedictory Function

#### Day - 1 : (Inaugural session)

In his welcome address, Dr. B. Chandrasekaran, Director of CSIR-CLRI welcomed the gathering with a new hope for adopting the sustainable technologies by the future leather industry. Mr. Rafeeque Ahmed, President AISHTMA in his Presidential Address expressed his heartiest gratitude to the CSIR-CLRI for their routine event every year in order to upgrade the industry with the modern technologies.

As the Chief Guest Dr. V. K. Saraswat, Member, NITI Ayog elaborated the relativity of the theme od LERIG and its commercial implementation in future leather industries.

Dr. Bhaskar Ramamurthi, Director IIT Chennai, Mr. P. R. Aqeel Ahmed, Vice Chairman – CLE and Mr. N. Shafeeq Ahmed, Chairman – IFLMEA were present as the Guests of Honour and shared their ideas and advises on the theme of this LERIG.

Dr. V. K. Saraswat, Member, NITI Ayog then delivered the prestigious Y. Nayudamma Memorial Lecture titled **"New Frontiers in Engineering"** elaborating the relativity between Social, Economical and Environmental parameters to make successful the theme 'SUSTAIN'. The programme was chaired by Dr. Bhaskar Ramamurthi.

With offering Vote of Thanks by Dr. K. J. Sreeram, Principal Scientist & Head, Centre for Analysis, Testing, Evaluation & Reporting Services (CLRI-CATERS), CSIR-Central Leather Research Institute and Convener, LERIG – 2018, the session concluded followed by Gala Dinner.

#### Day - 2 (Technical Session - I)

Subject of the session was *"Sustainability through Reduced Environmental Footprints"*. In absence of Mr. Rafeeque Ahmed, President AISHTMA & Chairman FARIDA Group, the session was chaired by Dr. B. Chandrasekaran, Director CSIR – CLRI.

**Mr. Avik Mitra**, Senior Adviser, NBQP, Quality Council of India delivered his presentation titled "Zero Defect Zero Effect (ZED) Financial Support to MSME in ZED certificate Scheme" and clarified the term "ZED" for MSME sectors.

**Mr. Tatheer Zaidi**, Coordinator, M/s. Solidaridad South & South East Asia delivered his presentation titled "Pollutions Prevention and Efficient Water Use in Kanpur-Unnao Leather Cluster" and highlighted the recent development in Kanpur leather sector.



## \_Commentaries <u>\_</u>

**Dr. Michael Costello**, Director of Sustainability, M/s STAHL INDIA delivered his presentation titled "The Competitive Advantage of Sustainability" and highlighted the competitive aspect of sustainability.

**Dr. P. Saravanan**, Chief Scientist, CSIR – CLRI delivered his presentation titled "Roadmap for Comprehensive Sustainability of Leather Industry" and highlighted the role of CLRI in environmental sustainability.

After Q & A session, the Chair offer thanks to all the speakers and the audience and asked to join in a Tea Break.

#### Day - 2 (Technical Session - II)

Subject of the session was "Chemicals for Sustainability of Tanning Industries". Mr. N. Shafeeque Ahmed, President, IFLMEA chaired the session.

**Dr. K.J. Sreeram**, Principal Scientist, CSIR-CLRI delivered his presentation titled "Chemicals for Sustainability: Role of CSIR-CLRI".

**Dr. Guido Batema**, Global Product Manager Wet End, M/s Smit & Zoon, delivered his lecture titled "Reducing the Environmental Impact of Leather Making; tools, Concepts and Products".

**Dr. V. Vijayabaskar**, Associate Vice President & **Mr. J. K. Basu**, Associate Vice President, M/s Balmer Lawrie & Co. delivered their presentation jointly on the topic "Exploring New Chemistries for Clean Leather Processing".

**Mr. Valentin Post**, Deputy Director, WASTE & Associate, UNIDO delivered his presentation titled "Steps towards a Circular Economy – Clean Tanning Processes (Kanpur)".

After Q & A session, the Chair offer thanks to all the speakers and the audience and asked to join in Lunch Break.

#### Day - 2 (Technical Session - III)

Subject of the session was *"Sustainability in Product Industries (Experience Sharing)"*. Mrs. Revathi Roy, Chairperson, FDDI & Director, M/s R R Leather Products Pvt. Ltd. chaired the session.

**Mr. Md. Sadiq**, Chief Scientist, Indian Fashion Studio, CSIR-CLRI, delivered his presentation titled "Design Needs of the Indian Leather Industry".

**Mr. Israr Ahmed,** Regional Chairman, CLE and Managing Director, FARIDA Group, delivered his presentation titled "Sustainability in the Leather Product Industry".

**Dr. Egbert Dikkers,** Leader Innovation & Sustainability, M/s Smit & Zoon delivered his presentation titled "Tannery of the Future – Checklist for Sustainable Leather Production".

After Q & A session, the Chair offer thanks to all the speakers and the audience and asked to join in a short Tea Break.

#### Day - 2 (Technical Session - IV)

This was a panel discussion on the topic "Policies/Program Needs : Challenges and New Avenues" which was chaired by **Dr. T. Ramasami**, Former Secretary, Department of Science & Technology, Govt. of India.

The orators of the session were Mr. Rafeeque Ahmed, President AISHTMA & Chairman FARIDA, Mr. Mukhtarul Amin, Chairman, CLE, Mr. P R Aqeel Ahmed, Vice Chairman, CLE, Mr. Shafeeq Ahmed, President, IFLMEA, Mr. Anil Agarwal, Joint Secretary, DIPP, Mrs. Revathi Roy, Chairperson, FDDI, Mr. R Ramesh Kumar, IAS, Regional Director, CLE and Dr. B. Chandrasekaran, Director, CSIR – CLRI.

#### **Valedictory Function**

The two day LERIG - 2018 programme came to an conclusion with offering a Vote of Thanks by the Convener of LERIG-2018 followed by National Anthem.

#### 33rd INDIA INTERNATIONAL LEATHER FAIR (IILF) 2018

The 33<sup>rd</sup> edition of India International Leather Fair (IILF) was inaugurated by Shri Suresh Prabhu, Hon'ble Minister for Commerce & Industry, Government of India on January 31, 2018, at Chennai Trade Centre, Nandambakkam. The India International Leather Fair (IILF)



## Commentaries \_

Chennai is an established event in the international Calendar of events and always held between 01-03 February every year. The exhibition presented Finished Leather, Leather Garments, Leather Goods, Footwear, Footwear Components, Machinery, Chemicals, Fashion Accessories, Publications, etc.

Over 450 exhibitors from India and overseas countries displayrd their products during the show which was spread on an area of around 10000 sq. mtrs. Participants were from Australia, Bangladesh, Brazil, China, France, Germany, Italy, New Zealand, Portugal, Russia, Saudi Arabia, Spain, Sri Lanka, Switzerland, Taiwan, Thailand, The Netherlands, Turkey, UAE, and United Kingdom. Significantly, China, France, Germany, Italy and Brazil were setting- up their National Pavilions.

#### **Designer Fair**

Considering the important role played by design in sustainable development, Council for Leather Exports

successfully organized two editions of Designer Fairs during Feb, 2016 & Feb 2017 in Chennai. The designer fair provides an opportunity to the Indian manufacturers and exporters of leather products and footwear to meet popular overseas and Indian designers.

42 Designers (including 8 Designers from India) displayed their designs in the Designer fair held in 2017, witnessed a footfall of 375 business visitors and generated a Business to the tune of US\$ 5,00,000.

The 3<sup>rd</sup> edition of Designer Fair was held during Feb.1-3, 2018 at Hotel ITC Grand Chola, Chennai, with financial assistance under Market Access Initiative Scheme (MAIS) of Dept. of Commerce. 40 Designers displayed their new creations of designs of Footwear and other Leather Products this year. No doubt, the Designers fair would serve as a successful platform in design development efforts of the Indian leather industry.





\_\_\_\_\_ Eventful Corner \_\_\_\_\_



\_\_\_\_\_ Eventful Corner \_\_\_\_\_



## Economic Corner

# FISCAL DEFICIT OVERSHOOTS FULL YEAR REVISED ESTIMATE IN JAN' 2018

It touches Rs 6.77 lakh crore at the end of January, 113.7 per cent of the target for the entire fiscal, on account of higher expenditure

India's fiscal deficit touched Rs 6.77 lakh crore at the end of January, 113.7 per cent of the target for the entire fiscal, on account of higher expenditure.

The fiscal deficit, reflection of government borrowings to meet revenue-expenditure gap, was 113.7 per cent in the 10-month period of 2017-18 as compared to 105.7 per cent in the year-ago period.

Fiscal deficit had been pegged at Rs 5.33 lakh crore, or 3.5 per cent of the GDP, for the current fiscal ending March 31.

The figure was revised to Rs 5.95 lakh crore in the Union Budget 2018-19, presented in Parliament earlier on February 1.

As per data released by the Controller General of Accounts (CGA), the revenue deficit during the April-January period of 2017-18, at Rs 4.80 lakh crore works out to 109.2 pr cent of the revised budget estimate. It was 129.9 per cent in the corresponding period of the last financial year.

#### Net tax receipts

Net tax receipts in the first 10 months of 2017-18 fiscal were 9.7 lakh crore. Total receipts from revenue and nondebt capital of the government during the period amount to Rs 11.63 lakh crore or 71.7 per cent of revised estimate.

The government's revenue expenditure during the current fiscal till January came in at Rs 15.75 lakh crore, 81 per cent of the full-year revised estimate.

The capital expenditure was Rs 2.64 lakh crore, or 96.9 per cent, of the full-year revised estimate.

The total expenditure was Rs 18.39 lakh crore,83 per cent of the government's full-year estimate of Rs 22.17 lakh crore.

(The Hindu - 28/02/2018)

# 'NO EXPENDITURE CUT IN FY'18 TO MEET FISCAL DEFICIT TARGET

The government will not go for an expenditure cut in 2017-18 to meet fiscal deficit target of 3.5% of GDP even as it has breached the level of 113.7% of the target, Expenditure Secretary Ajay Narayan Jha said on Thursday.

"There is no expenditure cut. There has been a policy, there will not be any expenditure cut," Mr. Jha said.

When asked how the government will meet the revised fiscal deficit target of 3.5%, he said indirect tax collections have already been factored into the revised target. The government has accounted for only 11 months of GST against 12 months of expenses as March GST numbers would come in April. Fiscal deficit has touched <sup>1</sup> 6.77 lakh crore at the end of January 2018, 113.7% of the target for the year, on account of higher expenditure.

#### Upward revision

The government had revised upwards the fiscal deficit at 1 5.95 lakh crore or 3.5% of GDP in the Union Budget 2018-19.

Earlier, the fiscal deficit target was 3.2%. Mr. Jha said the economy is looking up as the key sectors are showing buoyancy and growth.

"We expect that it will grow further and as per expectations. As far as fiscal deficit is concerned... a lot of adjustments will take place through recoveries which means that there is a net budgeting aspect," he said.

He said buoyancy in revenue also comes in the last two months of financial year and the fiscal deficit number will remain well within the revised target.

(The Hindu - 01/03/2018)

#### NDIAS ECONOMIC GROWTH COULD SUPPORT MORE US EXPORTS IN FUTURE : USTR

India's economic growth and development could support significantly more American exports in the future, the Trump administration has said. "Although existing Indian trade and regulatory policies have inhibited an even more robust trade and investment relationship, India's



## Economic Corner\_

economic growth and development could support significantly more US exports in the future," the US Trade Representative said in its trade policy agenda and **annual report to Congress. Two-way US-India trade in** goods and services in 1980 was only USD 4.8 billion and it grew to an estimated USD 114 billion in 2016, the USTR said, adding that an annual growth rate over this period was more than nine per cent.

It said India's reform of its goods and services tax may help create a common internal market that significantly lowers transaction costs. Additionally, implementation of India's National Intellectual Property Rights policy could protect US innovations, it said. "While these reforms are encouraging, there has also been a general trend of tariff increases in India, which reflects an active pursuit of import substitution policies," USTR rued. The Trump administration continues to press India to make meaningful progress in relation to these ambitious goals, primarily through the US-India Trade Policy Forum (TPF), it said.

In addition to these ongoing concerns, US stakeholders submitted petitions in late 2017 on restrictions on market access for dairy products and medical devices, seeking suspension of India's benefits under the Generalized System of Preferences (GSP) program, it said. "The most recent TPF, held on October 26, 2017, in Washington, DC, yielded limited progress on these and other areas of concern," USTR said, adding that it will continue to press for progress across the full range of bilateral trade issues, including intellectual property rights and market access for agriculture, non-agriculture goods, and services.

"These efforts will include TPF inter-sessional meetings, which include participation by senior-level officials from key US departments and agencies, and the ministeriallevel TPF at the end of 2018. This enhanced bilateral engagement will provide an opportunity to achieve meaningful results on a wide range of trade and investment issues," the USTR said.

In the 2017 US-India Bilateral Trade Policy Forum, USTR raised concerns with India's longstanding data localisation requirements, and expressed interest in working with the Indian government as it crafts a new data protection law to ensure that the law does not have negative impacts on digital trade. "USTR continues to work with the Indian government to encourage more robust bilateral digital trade," the report said.

(Business Standard - 01/03/2018)



## -: <u>JILTA</u> :-

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